

MODIS Science Team Semi-Annual Report

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a) Task Objectives

During this reporting period emphasis was given to preparation of Code for the V2 Code delivery, developing the land product phase-in plan, refining the land validation plans, planning a sun photometer network for a MODIS validation focus in southern Africa and reviewing the fire burn scar algorithm.

We continued to build the collaboration required to conduct the work of developing community consensus algorithms on Fire, Surface Reflectance and Vegetation Indices. The project has developed a number of collaborative activities that are intended to expand the scope of the team members' activities and involve a larger community in MODIS research. Chris Justice also attended the Discipline Leaders meetings and whenever possible the weekly Technical Team (TT) Meetings. Dr. Vermote represents the land group at the TT Meetings in Dr. Justice's absence. Chris Justice presented the MODIS instrument status and data needs and chaired the EDC DAAC SAP at the end of April.

In addition, the goals of the MODIS project, the status of the instrument and preliminary results of the research were presented at scientific meetings. The project was represented at the MODIS Science Team Meeting. Results of the studies undertaken as part of the project are in the process of being written up and submitted for publication. Publications are listed below.

In agreement with the MODIS Project Scientist, resources from this project continue to support the surface reflectance product. This includes providing shared support for personnel and computer resources with Dr. E. Vermote. A fuller account of this supporting activity performed by P.Fisher is outlined in the companion report of Dr. Vermote

b) Tasks Accomplished (Data analysis and interpretation)

Version 2 software (L.Giglio and P. Fisher)

During this reporting period, we focused on the completion and testing of the V2 code and the associated test data sets. A schedule was developed for the Version 2.1 delivery and the development of the MODIS Burn Scar algorithm. Initial prototyping is underway using an AVHRR 1km time series from 1989 for southern Africa.

MODIS Fire Detection (L. Giglio, P. Fisher, Y. Kaufman and J. Kendall)

Emphasis during this period was given to completion of the AVHRR active fire prototyping and evaluating the IGBP Global Fire Product. A paper was completed providing a comparison of three alternative detection algorithms. Based upon this work, a fourth algorithm was developed to overcome some of the limitations observed in the original three algorithms. An optimized implementation of the improved algorithm code has been submitted to the AVHRR Pathfinder 2 Project to run on 1 km data.

Additional improvements to the V1 code were identified and further discussions were held amongst the fire team concerning scheduling of the V2 delivery. The ECS common quality assessment (QA) flags were adopted for the fire product. Changes were made to the code to comply with new ECS metadata requirements. A Product Searchable Attribute List was created and submitted to ECS. This list details attributes in the MOD14 products that will be “search keys” within the DAAC processing system for granule selection.

Updated (and more accurate) MOD14 product volumes and loads were computed and provided to SDST.

Approximately 500 MB of MAS data were obtained for algorithm testing. The 40 m MAS pixels will be degraded to approximate the 1 km MODIS pixels.

The Level 2 and Level 3 fire product file specifications (Version 2) were revised and submitted.

The MODIS Fire Algorithm paper based on the ATBD has been revised and is close to submission as part of the IEEE special edition.

Plans were made for resource allocation through to Version 2.1 Fire Code delivery in January. Kaufman agreed to put emphasis from his group into addressing the triangular response function.

During June, Dr Jose Periera visited the group to evaluate the MODIS fire product suite. Dr Periera updated the group on fire scar mapping developments at the JRC Ispra. Areas of collaboration were outlined.

EOS Validation

The MODLAND validation plans are currently being refined and a final version of the plan is due into the project by the end of August. The Jornada Grassland PROVE was undertaken during this reporting period with a focus on prototyping in-situ measurements for the surface reflectance, vegetation index, brdf product chain. A relationship was established with the ORNL DAAC with respect to validation data management.

Bob Swap designed the optimum location for the southern african sun photometers and made a preliminary visit to these potential sites. A second visit is planned for August to install the instruments in conjunction with a mini-campaign on fire emissions being undertaken by the USFS.

The EDC DAAC SAP

Chris Justice chaired the EDC DAAC Science Advisory Panel Meeting (April 23-25th). With respect to MODIS, several critical issues were raised concerning availability of computer resources at the EDC DAAC at-launch for processing of MODIS products and the adequacy of the network for data transmission to EDC.

New Publications

Kaufman, Y.J., C.O. Justice, L.P. Flynn, J.Kendall, E. Prins, D.E. Ward, A. Setzer, Monitoring Global Fires from EOS-MODIS, IEEE EOS AM Special Edition - in preparation.

Giglio, L., J. Kendall and C.O. Justice, Evaluation of Global Fire Detection Algorithms Using Simulated AVHRR Data, IJRS Submitted.

Justice C.O. et al MODIS land products : at launch status - TGARS AM Special Edition - in preparation

New Staff

Dr.Robert Swap joined the MODIS activity. Initial attention will be given to assisting the aerosol transport modeling as part of the surface reflectance product. Collaboration has been fostered with the Inez Fung (Sellers Mooney IDS Project) to modify the GISS transport model for this purpose. Swap has also be collaborating with Brent Holben and the Aeronet Staff to set up the MODIS sunphotometer validation network in Southern Africa.